Application Notes

RFID+

FileMaker RFID Reader Application

for iOS mobile devices

NeoCode Software

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Notice of Copyright

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The FileMaker file called RFIDPlus_demo.fmp12, referred to in this documentation, that demonstrates how FileMaker interacts with the RFID+ Reader Application, is designed and developed exclusively by Neo Code Software Ltd. and is protected by all applicable international Copyright Laws.

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Revision History

Version	Date	Changes
01	2014-07-23	RFID+ FileMaker RFID Reader Application released
02	2014-09-19	RFID+ App available on iTunes

Application Overview

The RFID+ FileMaker RFID Reader Application developed by Neo Code Software Ltd. allows the scanning of RFID (radio-frequency identification) tags and subsequent retrieval of the coded information in these tags for use in a custom-built FileMaker database.

A FileMaker 13 Go database solution can be custom-built to interact with the RFID+ Application using the Open URL script step with ***callback*** function to return information encoded on RFID tags ***directly*** and ***seamlessly*** back into the database to be used in records, calculations, scripts, etc. using only scripts and functions initiated within the FileMaker Go database itself.

No intermediate interaction with the RFID+ Application is required to scan information from RFID tags using a custom-built FileMaker Go database. Following is detailed description of this process.

Application Details

The RFID+ Application is installed on an iOS mobile device (iPhone, iPad), identitified on your device after installation by the teal icon. (fig. 1)

fig 1. RFID+ Reader Application icon

The RFID+ Application interacts with a hardware device called the ARETE POP. (fig.1a)

fig 1a. The ARETE POP RFID reader

This device is what actually scans and reads the RFID tag and retrieves the information (a string of numbers and letters) encoded on the RFID tag. The ARETE POP is inserted into the headphone jack of the iOS device being used, such as an iPhone or iPad.

(con't)

Application Details (con't)

After scanning an RFID tag using the Scan function, the RFID+ Application returns the encoded information on the tag back into the application for viewing. (fig. 2)

fig 2. The RFID+ Application returns a scan result

fig 3. Enabling RFID+ Simulation mode

The RFID+ Application also has a Simulation mode. (fig. 3) When not actually scanning with the ARETE POP device, enable Simulation mode to return simulated codes back into the application.

These simulated codes can also be returned directly back into the FileMaker Go database that is interacting with the RFID+ Application; this is useful for testing purposes.

After the RFID+ Application is installed on an iOS device, a custom-built FileMaker Go database can interact with the application to either return live data from actual RFID tags with the ARETE POP device or using Simulation mode to return simulated codes.

(con't)

Application Details (con't)

The encoded information, once retrieved, can then be stored in the database as a normal string of letters and numbers and used accordingly, in fields, scripts, variables, calculations, etc.

The method through which the FileMaker Go database can initiate a scan through the RFID+ Application and return encoded RFID tag information back into itself is by using the ***Open URL*** script step with a particular ordered scheme of information that is known as a ***callback***.

The Open URL script step can be commonly used to open a URL in a user's browser, by referring to the specific URL in the function in a script.

Additionally, this function can also be configured to interact with and issue a command to particular applications to return data back to a FileMaker database by initiating a script within the database using the information retrieved as the parameter. This is referred to as a callback. (The function calls back to another script within a FileMaker database.)

The FileMaker database itself can be either locally stored on the iOS device, or accessed remotely, both through FileMaker Go, with no difference in usage.

The ***callback*** functionality already has widespread use, specifically with barcode scanner applications, that are able to use the mobile device's camera to scan and retrieve barcode information.

The order of operations is thus:

1. In FileMaker, initiate 'scan' through a script that contains the ***callback*** command.
2. Perform the actual scan.
3. The *called back* script is run, performing the set actions, using the scan result as parameter.

For scanning RFID tags and retrieving the information into a FileMaker database using the RFID+ Application and ARETE POP, the exact same ***callback*** functionality is used, with a customized command that the RFID+ Application knows how to interpret.

Following is an explanation of how the RFID+ Application uses the OpenURL ***callback*** in FileMaker.

(con't)

Application Details (con't)

For the purposes of demonstration, Neo Code Software Ltd. has developed a FileMaker file called RFIDPlus_demo.fmp12 that uses the Open URL ***callback*** scheme specifically designed to interact with the RFID+ Application to return scan results, using either the ARETE POP hardware and RFID tags, or using the RFID+ Application in Simulation mode.

Pictured is the iPhone screen of the RFIDPlus_demo.fmp12 file. (fig. 6)

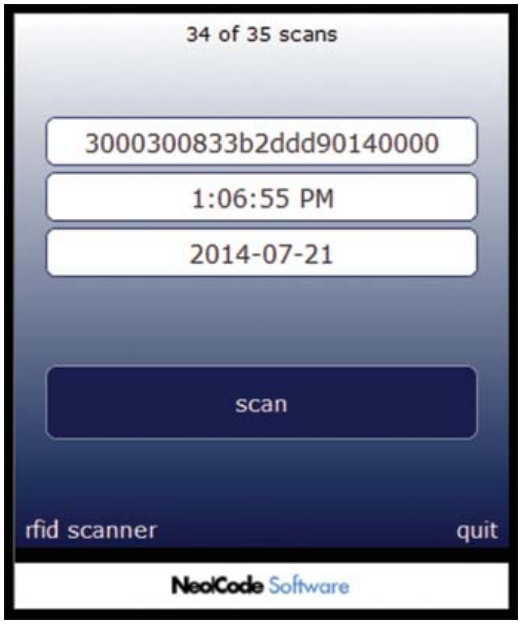

fig 6. RFIDPlus_demo.fmp12 FileMaker demo file with sample scan result

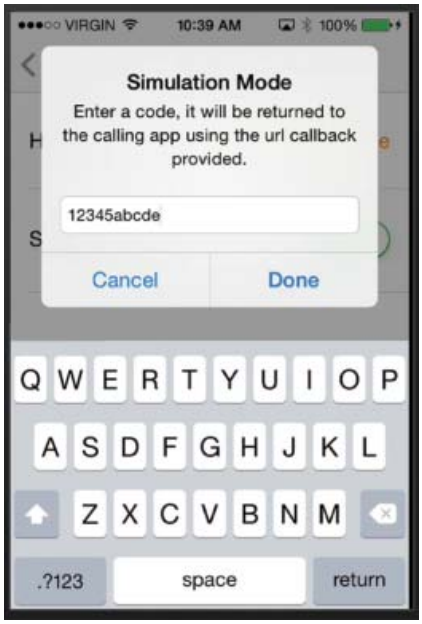

fig 7. RFID+ Application, entering a code in Simulation mode

To run the demonstration, with the RFID+ Application set in either live or Simulation mode, we simply press the Scan button in the FileMaker file.

This will open the RFID+ Reader Application on the screen. In live mode with the ARETE POP device, then scan the RFID tag, by placing the ARETE POP in close proximity to the RFID tag. In Simulation mode (fig. 7), enter any letter/number string using the keyboard.

Once the scan is complete, the result is returned back into FileMaker automatically. In our demo, this creates a new record and writes the result in the top field, along with date and time stamp.
(fig. 6)

(con't)

Application Details (con't)

The Scan button activates a script in FileMaker called "scan button" which contains the Open URL script step containing the ***callback***. (fig. 8)

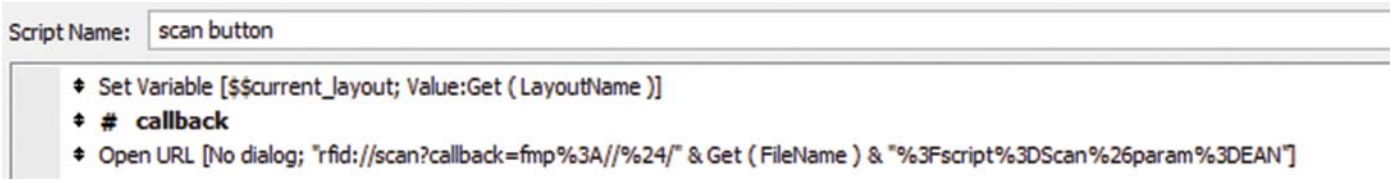
Script Name:
scan button
Set Variable [$$current_layout; Value:Get (LayoutName)]
callback
Open URL [No dialog; "rfid://scan?callback=fmp%3A//%24/" & Get (FileName) & "%3Fscript%3DScan%26param%3DEAN"]

fig 8. The "scan button" script containing the ***callback*** in the Open URL script step.

The command follows the same general syntax as the pic2shop ***callback***, but contains a prefix ("rfid://") that the RFID+ Application is specifically designed to use.

Remember that the URL needs to be encoded to handle certain characters. For example, the $ sign is replaced with %24.

Of special note is that, in the ***callback*** is a) the script that will be run, when the scan is complete (what script is 'called back') and b) where the parameter is set that the script will run with.

In the ***callback*** shown:
a) the script is 'Scan', in the string %3Fscript%#**DScan**
b) the parameter is in the string %26param%#**DEAN**. EAN is a placeholder that the RFID+ Application uses to return the scan result as the actual parameter.

Note: In future releases, the 'EAN' string in b) can be set as a variable to tell the RFID+ Application which type of data to return that is encoded on a RFID tag, as there are multiple types.

(con't)

Application Details (con't)

Once the scan is complete, as previously described, the script called "Scan" is run within the FileMaker file, as activated by the callback. (fig. 9)

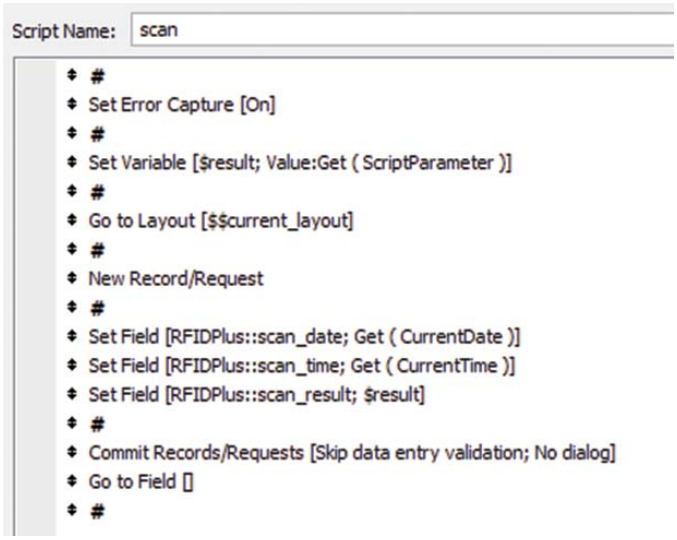

fig 9. The "Scan" script that is 'called back' after scanning

This script simply creates a new record; The Get (ScriptParameter) script step retrieves the scan result that was passed in with the callback and scan, then used to set the 'scan_result' field.

To review, please see the following graphic (fig. 10) to show the entire sequence.

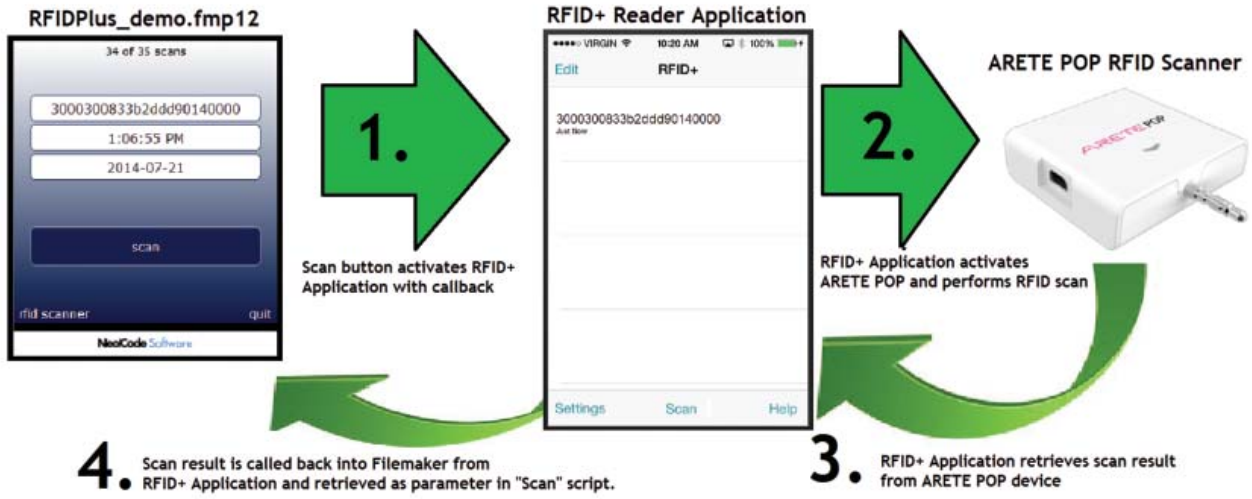

fig 10. The entire sequence of scan activation to return to FileMaker.

Company Information

To buy hardware and software visit:
https://store.neocodesoftware.com/products/RFID.html
Providing for all your FileMaker needs: hosting, templates, plugins, and prebuilt solutions.

To get FileMaker Go from the App Store visit:
https://itunes.apple.com/ca/app/filemaker-go-13/id675292600?mt=8

To get the RFID+ application by Neo Code Software Ltd. from the App Store visit:
https://itunes.apple.com/ca/app/rfid+/id900717506?mt=8

To download the RFIDPlus_demo.fmp12 file referred to in these notes as zip archive, visit:
http://felice.neocodesoftware.com/RFIDPlus/RFIDPlus_demo.zip

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